IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Appellants:	Michael O. POLLEY et al.	§	Group Art Unit:	2611
		§		
Application No.:	10/723,215	§	Examiner:	Qutbuddin Ghulamali
		§		
Filed:	November 26, 2003	§	Confirmation No.	8507
		§		
For:	Frequency Domain Subchannel Transmit Antenna Selection and Power Pouring for Multi-Antenna Transmission	§ § § § §	Atty. Docket No.	TI-36036 (1962-08100)

APPEAL BRIEF

Mail Stop Appeal Brief—Patents Date: August 27, 2008
Commissioner for Patents
PO Box 1450
Alexandria, VA 22313-1450

Sir:

Appellants hereby submit this Appeal Brief in connection with the above-identified application. A Notice of Appeal was electronically filed on June 27, 2008.

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I. REAL PARTY IN INTEREST

The real party in interest is Texas Instruments Incorporated, a Delaware corporation, having its principal place of business in Dallas, Texas.

II. RELATED APPEALS AND INTERFERENCES

Appellants are unaware of any related appeals or interferences.

III. STATUS OF THE CLAIMS

Originally filed claims:	1-26
Claim cancellations:	12 and 23-24
Added claims:	None.
Presently pending claims:	1-11, 13-22 and 25-26
Presently appealed claims:	1-11, 13-22 and 25-26

IV. STATUS OF THE AMENDMENTS

No claims were amended after the Final Office action dated April 4, 2008.

V. SUMMARY OF THE CLAIMED SUBJECT MATTER

The claimed subject matter provides a technique for enabling a multiple-antenna WLAN device to achieve performance improvements when communicating with a single-antenna WLAN device or when communicating with a multiple-antenna WLAN device operating in a single-antenna mode. P. 7, ll. 4-10. In general, the technique is directed to generating a weighting vector for transmissions signals that indicates the relative transmission power to be used for each sub-channel in the transmission. P. 11, l. 18 – p. 13, l. 23.

Claim 1 is directed to a wireless device (200, 420, 528) that communicates across a spectrum having a plurality of sub-channels. Figs. 2, 4, 5; p. 9, ll. 15-21. The wireless device comprises a plurality of antennas (202, 204, 416, 418, 524, 526) through which the wireless device communicates with a second wireless device (206, 426, 528), where each antenna of the plurality of antennas communicates with the second wireless device via an associated communication pathway (210, 212). Figs. 2, 4, 5; p. 10, l. 21 – p. 11, l. 17. The device also comprises sub-channel power analysis logic (402, 502) coupled to the plurality of antennas and adapted to determine a communication quality for at least two communication pathways and determine which communication pathway has a highest communication quality on a sub-channel by sub-channel basis. Figs. 4, 5; p. 14, ll. 6-8; p. 15, ll. 3-6. The device further comprises diversity selection logic (404, 504) coupled to the sub-channel power analysis logic and adapted to determine a weighting vector for an associated antenna based on the highest communication quality. *Id.* The weighting vector specifies a relative transmission power for each sub-channel for the associated antenna. P. 11, l. 18 – p. 13, l. 23.

Claim 9 is directed to a method that comprises receiving data transmitted from a first wireless device (206, 426, 528) to a second wireless device (200, 420, 528) using a plurality of antennas (202, 204, 416, 418, 524, 526) at the second wireless device. Figs. 2, 4, 5; p. 10, l. 21 – p. 11, l. 17. Each antenna of the plurality of antennas communicates with the first wireless device via an associated communication pathway (210, 212). *Id.* The method also comprises determining a plurality of channel characteristics associated

with each antenna of the plurality of antennas. P. 7, ll. 17-24. The method further comprises, on a per sub-channel basis, computing a weighting vector for each antenna of the plurality of antennas based on the channel characteristics. P. 10, ll. 4-6. This computation includes representing the weighting vector using a plurality of bits, each bit corresponding to a different sub-channel, and each bit indicating whether an antenna associated with the weighting vector is used to transmit data on the corresponding sub-channel. P. 10, ll. 4-20. The computation also comprises, for each communication pathway, combining a transmission signal with the weighting vector to form a weighted transmission signal. P. 13, ll. 13-17. The computation further comprises transmitting the weighted transmission signal from the second wireless device to the first wireless device via a plurality of communication pathways. *Id.*

Claim 13 is directed to a method that comprises receiving data transmitted from a first wireless device (206, 426, 528) to a second wireless device (200, 420, 528) using a plurality of antennas (202, 204, 416, 418, 524, 526) at the second wireless device. Figs. 2, 4, 5; p. 10, l. 21 – p. 11, l. 17. Each antenna of the plurality of antennas communicates with the first wireless device via an associated communication pathway (210, 212). *Id.* The method also comprises determining a plurality of channel characteristics associated with each antenna of the plurality of antennas. P. 7, ll. 17-24. The method further comprises, on a per sub-channel basis, computing a weighting vector for each antenna of the plurality of antennas based on the plurality of channel characteristics. P. 10, ll. 4-6. The method further comprises representing the weighting vector in a ratio format. P. 11, ll. 20-23. The ratio format specifies an amount of power to be applied to an antenna associated with the weighting vector for each sub-channel. P. 11, l. 18 – p. 13, l. 9. For each communication pathway, the method includes combining a transmission signal with the weighting vector to form a weighted transmission signal and transmitting the weighted transmission signal from the second wireless device to the first wireless device via a plurality of communication pathways. P. 13, ll. 13-17.

Claim 18 is directed to a system that comprises an access point (200, 420, 528) having a plurality of antennas (202, 204, 416, 418, 526, 528) and a wireless station (206,

426, 528) in communication with the access point via a single antenna (208) in the wireless station. Figs. 2, 4, 5; p. 6, ll. 11 – p. 7, l. 7. The plurality of antennas in the access point receive a data signal from the single antenna in the wireless station via a plurality of communication pathways (210, 212), and each communication pathway comprises a plurality of sub-channels. P. 6, l. 18 – p. 7, l. 2. The access point determines channel characteristics and a weighting vector for each antenna of the plurality of antennas, with each weighting vector being indicative of an amount of power to be provided to each sub-channel for an associated antenna. P. 10, ll. 4-20. The access point reproduces a data transmission signal, combines each copy of the data transmission signal with a different weighting vector to produce weighted transmission signals, and transmits each weighted transmission signal to the wireless station via a separate communication pathway. P. 13, ll. 13-17.

Claim 25 is directed to a method that comprises, for each of a plurality of antennas (202, 204, 416, 418, 524, 526), determining a communication quality of each sub-channel of a communication pathway, the communication pathway comprising a plurality of sub-channels. Figs. 2, 4, 5; p. 14, ll. 6-8; p. 15, ll. 3-6. The method also comprises, for each sub-channel, selecting a plurality of antennas and providing power to each antenna of the plurality of antennas based on the number of data transmissions since the communication quality was most recently determined. P. 13, ll. 4-7. The method further includes concurrently transmitting data via the plurality of antennas across the plurality of sub-channels. P. 13, ll. 13-17.

Claim 26 is directed to a method that includes, for each of a plurality of antennas (202, 204, 416, 418, 524, 526), determining a communication quality of each sub-channel of a communication pathway, with the communication pathway comprising a plurality of sub-channels. Figs. 2, 4, 5; p. 14, ll. 6-8; p. 15, ll. 3-6. The method also comprises, for each sub-channel, selecting a plurality of antennas and providing power to each antenna of the plurality of antennas based on the amount of time elapsed since the communication quality was most recently determined. P. 11, ll. 18-21. The method

further comprises concurrently transmitting data via the plurality of antennas across the plurality of sub-channels. P. 13, ll. 13-17.

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

Whether under 35 U.S.C. § 103(a) claims 1-8, 13-22 and 25-26 are obvious in view of Raleigh (U.S. Patent No. 6,144,711) and Akaiwa (U.S. Pat. No. 5,710,995).

Whether under 35 U.S.C. § 102(b) claims 9-11 are anticipated by Raleigh (U.S. Patent No. 6,144,711).

VII. ARGUMENT

A. Summary of Akaiwa

Akaiwa is directed to a circuit that receives multiple, wireless signals and selects the best signal from among the received wireless signals. Referring to Fig. 1 of Akaiwa, two antennas 11 and 12 are shown. Fig. 1; col. 2, ll. 15-17. Each antenna couples to a separate processing circuit 13, 14. Fig. 1; col. 2, ll. 15-35. The processing circuits contain filters usable to "at least partially isolate the RF broadcast signals for the broadcast station of interest." *Id.* The processing circuit 13 produces a corrected signal, while the processing circuit 14 produces a diversity signal. *Id.* A copy of each corrected signal is provided to a common signal quality monitor circuit (SQMC) 17. Fig. 1; col. 2, ll. 33-37. A copy of each corrected signal also is provided to separate detectors 15, 16. Fig. 1; col. 2, ll. 33-45. The detectors 15, 16 receive RF signals from the processing circuits 13, 14, "convert [them] to an intermediate frequency (IF) signal, and detect the audio information encoded in the IF signal." Fig. 1; col. 2, ll. 33-49. The SQMC 17 provides an indication as to the relative qualities of the multiple signals to the selection circuit 18. Fig. 1; col. 2, ll. 37-41. The detectors 15, 16 also provide the modified signals to the selection circuit 18. Fig. 1; col. 2, ll. 37-42. In turn, the selection circuit 18 selects from among the multiple signals based on the relative qualities of the multiple signals. *Id.* The selected signal is then further processed via node 19. *Id.*

Akaiwa's circuit appears to be implemented in **<u>receivers only</u>**. The circuit does not appear to be useful to any degree in **<u>transmitting</u>** data.

B. Rejections under 35 U.S.C. § 103(a)

1. Claims 1-3, 5, 7-8, 13-14 and 17-20

Claims 1-3, 5, 7-8, 13-14 and 17-20 stand rejected as allegedly obvious in view of Raleigh and Akaiwa. Appellants traverse this rejection. Claim 1 is representative of this group of claims. The grouping should not be construed to mean the patentability of any of the claims may be determined in later actions (*e.g.*, actions before a court) based on the groupings. Rather, the presumption of 35 USC § 282 shall apply to each of these claims individually.

Claim 1 requires "wherein the weighting vector specifies a relative transmission power for each sub-channel for the associated antenna." The Examiner has repeatedly admitted that Raleigh fails to teach this limitation. Accordingly, the Examiner has turned to Akaiwa to satisfy this limitation. The Examiner asserts that Akaiwa, col. 1, ll. 53-64 and col. 4, ll. 22-50, teaches this limitation. Specifically, the Examiner on pp. 3-4 of the Final Office Action provides a detailed description of this portion of Akaiwa. The Examiner basically outlines the same description of Akaiwa that Appellants have provided above in section VII(A) of this Brief. The Examiner concludes with a rebuttal to Appellants' preceding Response to Office Action by pointing out on p. 4 of the Final Office Action that Akaiwa teaches multiplying input signals from antennas 11, 12 with weight factors W1 and W2 at nodes 33, 34 (see detailed version of processing circuits 13, 14 of Figs. 1-2 in Fig. 3).

Appellants respectfully submit that, despite his rebuttal, the Examiner is still mistaken. As Appellants have pointed out numerous times, Akaiwa is directed to technology for receivers. Akaiwa appears to make absolutely no mention of transmitting power for individual sub-channels or even weighting vectors in a transmission context, as required by claim 1. Given that Raleigh fails to teach the above limitation and that Akaiwa cannot possibly teach this limitation (given the apparent lack of transmission technology), the combination of Raleigh and Akaiwa cannot and does not teach the above limitation.

Mixing or analogizing Akaiwa's receiver technology with transmitters is erroneous at least because Akaiwa appears to have no use for "relative transmission power[s]" for sub-channels. Indeed, because Akaiwa is wholly dedicated to receiver technology, nowhere does Akaiwa appear to teach or even suggest weighting vectors that specify "relative transmission power for each sub-channel for the associated antenna." Appellants strongly and respectfully urge that Board to carefully consider the Examiner's citations to Akaiwa. Appellants are confident that the Board will agree that Akaiwa, alone or in combination with Raleigh, fails to teach or even suggest the limitation in question.

For at least these reasons, the Examiner erred in rejecting claim 1. Thus, Appellants respectfully ask the Board to reverse the Examiner's rejection of all claims in claim 1's group and set the claims for issue.

2. Claims 4, 15, 21 and 25

Claims 4, 15, 21 and 25 stand rejected as allegedly obvious in view of Raleigh and Akaiwa. Appellants traverse this rejection. Claim 25 is representative of this group of claims. The grouping should not be construed to mean the patentability of any of the claims may be determined in later actions (*e.g.*, actions before a court) based on the groupings. Rather, the presumption of 35 USC § 282 shall apply to each of these claims individually.

Claim 25 requires "providing power to each antenna of the plurality of antennas based on the number of data transmissions since the communication quality was most recently determined." The Examiner admits that Raleigh fails to teach or suggest this limitation. Instead, the Examiner turns to Akaiwa and asserts that Akaiwa teaches this limitation at col. 1, ll. 53-63; col. 3, ll. 44-62; and col. 4, ll. 15-65.

The Examiner is mistaken. As Appellants explained above in section VII(B)(1), Akaiwa fails to teach or even suggest providing power to antennas in the context of data transmission, because in the cited sections (and in general) Akaiwa teaches only receiver technology. In addition, Akaiwa most certainly fails to teach or suggest providing such power to an antenna "based on the number of data transmissions since the communication quality was most recently determined." Akaiwa obviously fails to teach this limitation because 1) Akaiwa does not even teach data transmissions; 2) even if Akaiwa did teach data transmissions (which it does not), Akaiwa does not teach any method of determining the number of data transmissions since communication quality was most recently determined. While Akaiwa does appear to teach determining communication quality, as explained above in section VII(A), Akwaia stops there and does not even begin to contemplate the specificity with which the limitations of claim 25 are recited.

For at least these reasons, the Examiner erred in rejecting claim 25. Thus, Appellants respectfully ask the Board to reverse the Examiner's rejection of all claims in claim 25's group and set the claims for issue.

3. Claims 6, 16, 22 and 26

Claims 6, 16, 22 and 26 stand rejected as allegedly obvious in view of Raleigh and Akaiwa. Appellants traverse this rejection. Claim 26 is representative of this group of claims. The grouping should not be construed to mean the patentability of any of the claims may be determined in later actions (*e.g.*, actions before a court) based on the groupings. Rather, the presumption of 35 USC § 282 shall apply to each of these claims individually.

Claim 26 requires "providing power to each antenna of the plurality of antennas based on the amount of time elapsed since the communication quality was most recently determined." The Examiner admits that Raleigh fails to teach this limitation. Instead, the Examiner assets that Akaiwa teaches this limitation. The Examiner is mistaken. As Appellants explained above in section VII(B)(1), Akaiwa fails to teach or even suggest providing power to antennas in the context of data transmission, because in the cited sections (and in general) Akaiwa teaches only receiver technology. In addition, Akaiwa most certainly fails to teach or suggest providing such power to an antenna "based on the amount of time elapsed since the communication quality was most recently determined." Akaiwa obviously fails to teach this limitation because 1) Akaiwa does not even teach data transmissions; 2) even if Akaiwa did teach data transmissions (which it does not), Akwaia does not teach any method of determining the amount of time elapsed since communication quality was most recently determined. While Akaiwa does appear to teach determining communication quality, as explained above in section VII(A), Akwaia stops there and does not even begin to contemplate the specificity with which the limitations of claim 26 are recited.

For at least these reasons, the Examiner erred in rejecting claim 26. Thus, Appellants respectfully ask the Board to reverse the Examiner's rejection of all claims in claim 26's group and set the claims for issue.

C. Rejections of Claims 9-11 under 35 U.S.C. § 102(b)

Claims 9-11 stand rejected as allegedly anticipated by Raleigh. Appellants traverse this rejection. Claim 9 is representative of this group of claims. The grouping should not be construed to mean the patentability of any of the claims may be determined in later actions (*e.g.*, actions before a court) based on the groupings. Rather, the presumption of 35 USC § 282 shall apply to each of these claims individually.

Claim 9 requires "on a per sub-channel basis, computing a weighting vector for each antenna of the plurality of antennas based on the channel characteristics." Claim 9 further requires that the computing comprises "representing the weighting vector using a plurality of bits, each bit corresponding to a different sub-channel, and each bit indicating whether an antenna associated with the weighting vector is used to transmit data on the corresponding sub-channel." Raleigh fails to teach or even suggest this limitation.

The Examiner asserts that Raleigh discloses this limitation at col. 2, ll. 1-15, col. 6, ll. 42-67, and col. 8, ll. 40-58. Applicants now explain why each of these citations fails to teach the limitation referenced above.

Col. 2, ll. 1-15 of Raleigh merely mention that multiple transmitter/receiver elements may be used. Col. 6, ll. 42-67 of Raleigh discuss spatial processing, in which one or more symbols that are to be transmitted are multiplied with one or more spatial vector weights. This portion of Raleigh further describes optimization of spatial vector weights so as to minimize interference between sub-channels. Col. 8, ll. 40-58 also describes optimization of vector weights. Although these citations do appear to discuss vector weights, sub-channels, etc., they still fail to teach or suggest the determination of a weighting vector for multiple antennas, with each vector comprising multiple bits, each bit indicating whether the antenna corresponding to that vector is used to transmit data on the sub-channel associated with that bit (as required by claim 9). Raleigh's mere application of vector weights to transmission signals (and Raleigh's adjustment of the vector weights) does not meet the limitations of claim 9.

For at least these reasons, the Examiner erred in rejecting claim 9. Thus, Appellants respectfully ask the Board to reverse the Examiner's rejection of all claims in claim 9's group and set the claims for issue.

D. Conclusion

For the reasons stated above, Appellants respectfully submit that the Examiner erred in rejecting all pending claims. It is believed that no extensions of time or fees are required, beyond those that may otherwise be provided for in documents accompanying this paper. However, in the event that additional extensions of time are necessary to allow consideration of this paper, such extensions are hereby petitioned under 37 C.F.R. § 1.136(a), and any fees required (including fees for net addition of claims) are hereby authorized to be charged to Texas Instruments Incorporated's Deposit Account No. 20-0668.

Respectfully submitted,

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VIII. CLAIMS APPENDIX

1. (Previously presented) A wireless device that communicates across a spectrum having a plurality of sub-channels, said wireless device comprising:

a plurality of antennas through which the wireless device communicates with a second wireless device, each antenna of the plurality of antennas communicates with the second wireless device via an associated communication pathway;

sub-channel power analysis logic coupled to the plurality of antennas and adapted to determine a communication quality for at least two communication pathways and determine which communication pathway has a highest communication quality on a sub-channel by sub-channel basis; and

diversity selection logic coupled to the sub-channel power analysis logic and adapted to determine a weighting vector for an associated antenna based on the highest communication quality, wherein the weighting vector specifies a relative transmission power for each sub-channel for the associated antenna.

2. (Previously presented) The device of claim 1, wherein the weighting vector for the associated antenna comprises a plurality of bits, each bit corresponding to one sub-channel, and each bit indicating whether the associated antenna is used to transmit on the corresponding sub-channel.

3. (Original) The device of claim 1, wherein the weighting vector represented in a proportional format comprises a plurality of values, each value corresponding to a sub-channel and each value being indicative of an amount of power to be provided to the associated antenna.

4. (Original) The device of claim 3, wherein the amount of power to be provided to an antenna is determined by the number of signal transmissions since the communication quality for each sub-channel of the associated communication pathway was most recently determined.

5. (Original) The device of claim 3, wherein the amount of power to be provided to an antenna is based on the communication quality of each sub-channel in the associated communication pathway.

6. (Original) The device of claim 3, wherein the amount of power to be provided to an antenna is determined by the amount of time elapsed since the communication quality for each sub-channel of the associated communication pathway was most recently determined.

7. (Original) The device of claim 1, wherein the wireless device may wirelessly communicate with a plurality of wireless stations.

8. (Original) The device of claim 1, further comprising a signal splitter coupled to the diversity selection logic and adapted to reproduce signals to be transmitted.

9. (Previously presented) A method, comprising:

receiving data transmitted from a first wireless device to a second wireless device using a plurality of antennas at the second wireless device, wherein each antenna of the plurality of antennas communicates with the first wireless device via an associated communication pathway;

determining a plurality of channel characteristics associated with each antenna of the plurality of antennas;

on a per sub-channel basis, computing a weighting vector for each antenna of the plurality of antennas based on the channel characteristics, comprising:

representing the weighting vector using a plurality of bits, each bit corresponding to a different sub-channel, and each bit indicating whether an antenna associated with the weighting vector is used to transmit data on the corresponding sub-channel;

for each communication pathway, combining a transmission signal with the weighting vector to form a weighted transmission signal; and

transmitting the weighted transmission signal from the second wireless device to the first wireless device via a plurality of communication pathways.

10. (Original) The method of claim 9, wherein the first wireless device transmits data to a plurality of wireless devices and receives data from a plurality of wireless devices.

11. (Original) The method of claim 9, wherein each weighting vector specifies a relative transmission power for each sub-channel.

12. (Cancelled).

13. (Previously presented) A method, comprising:

receiving data transmitted from a first wireless device to a second wireless device using a plurality of antennas at the second wireless device, wherein each antenna of the plurality of antennas communicates with the first wireless device via an associated communication pathway;

determining a plurality of channel characteristics associated with each antenna of the plurality of antennas;

on a per sub-channel basis, computing a weighting vector for each antenna of the plurality of antennas based on the plurality of channel characteristics;

representing the weighting vector in a ratio format;

wherein the ratio format specifies an amount of power to be applied to an antenna associated with the weighting vector for each sub-channel;

for each communication pathway, combining a transmission signal with the weighting vector to form a weighted transmission signal; and

transmitting the weighted transmission signal from the second wireless device to the first wireless device via a plurality of communication pathways.

14. (Previously presented) The method of claim 13, wherein specifying the amount of power to be applied to an antenna is based on a communication quality of each sub-channel in the associated communication pathway.

15. (Previously presented) The method of claim 14, wherein specifying the amount of power to be applied to each antenna is further based on a number of data transmissions since the communication quality of the associated communication pathway was most recently determined.

16. (Original) The method of claim 14, wherein specifying the amount of power to be applied to each antenna is further based on the amount of time elapsed since the communication quality of the associated communication pathway was most recently determined.

17. (Previously presented) The method of claim 13, wherein channel characteristics comprise a signal-to-noise ratio.

18. (Previously presented) A system, comprising:

an access point having a plurality of antennas; and

a wireless station in communication with the access point via a single antenna in the wireless station;

wherein the plurality of antennas in the access point receive a data signal from the single antenna in the wireless station via a plurality of communication

pathways, each communication pathway comprising a plurality of sub-channels;

wherein the access point determines channel characteristics and a weighting vector for each antenna of the plurality of antennas, each weighting vector being indicative of an amount of power to be provided to each sub-channel for an associated antenna;

wherein the access point reproduces a data transmission signal, combines each copy of the data transmission signal with a different weighting vector to produce weighted transmission signals, and transmits each weighted transmission signal to the wireless station via a separate communication pathway.

19. (Original) The system of claim 18, wherein the weighting vector comprises a plurality of bits, each bit corresponding to one sub-channel, and each bit indicating whether an antenna associated with the weighting vector is used to transmit on the corresponding sub-channel.

20. (Original) The system of claim 18, wherein the weighting vector comprises a plurality of values, each value corresponding to a sub-channel and each value being representative of an amount of power to be applied to an antenna associated with the weighting vector.

21. (Original) The system of claim 20, wherein the amount of power to be applied to a particular antenna for a particular sub-channel is based on the number of data transmissions since the quality of the associated communication pathway was last determined; and

wherein the amount of power to be provided to a particular antenna for a particular sub-channel is further based on the signal-to-noise ratio associated with that antenna.

22. (Original) The system of claim 20, wherein the amount of power to be applied to a particular antenna for a particular sub-channel is based on the amount of time elapsed since the quality of the associated communication pathway was last determined; and

wherein the amount of power to be provided to a particular antenna for a particular sub-channel is further based on the signal-to-noise ratio associated with that antenna.

23.-24. (Cancelled).

25. (Previously presented) A method, comprising:

for each of a plurality of antennas, determining a communication quality of each sub-channel of a communication pathway, the communication pathway comprising a plurality of sub-channels;

for each sub-channel, selecting a plurality of antennas and providing power to each antenna of the plurality of antennas based on the number of data transmissions since the communication quality was most recently determined; and

concurrently transmitting data via the plurality of antennas across the plurality of sub-channels.

26. (Previously presented) A method, comprising:

for each of a plurality of antennas, determining a communication quality of each sub-channel of a communication pathway, the communication pathway comprising a plurality of sub-channels;

for each sub-channel, selecting a plurality of antennas and providing power to each antenna of the plurality of antennas based on the amount of time elapsed since the communication quality was most recently determined; and

concurrently transmitting data via the plurality of antennas across the plurality of sub-channels.

IX. EVIDENCE APPENDIX

None.

X. RELATED PROCEEDINGS APPENDIX

None.